



Chemistry I

Models of the Atom



Models of the Atom

- 400 B.C.(or somewhere about that time)
 - Greeks- idea that atoms are small indivisible building blocks of stuff



Dalton's Atomic Model

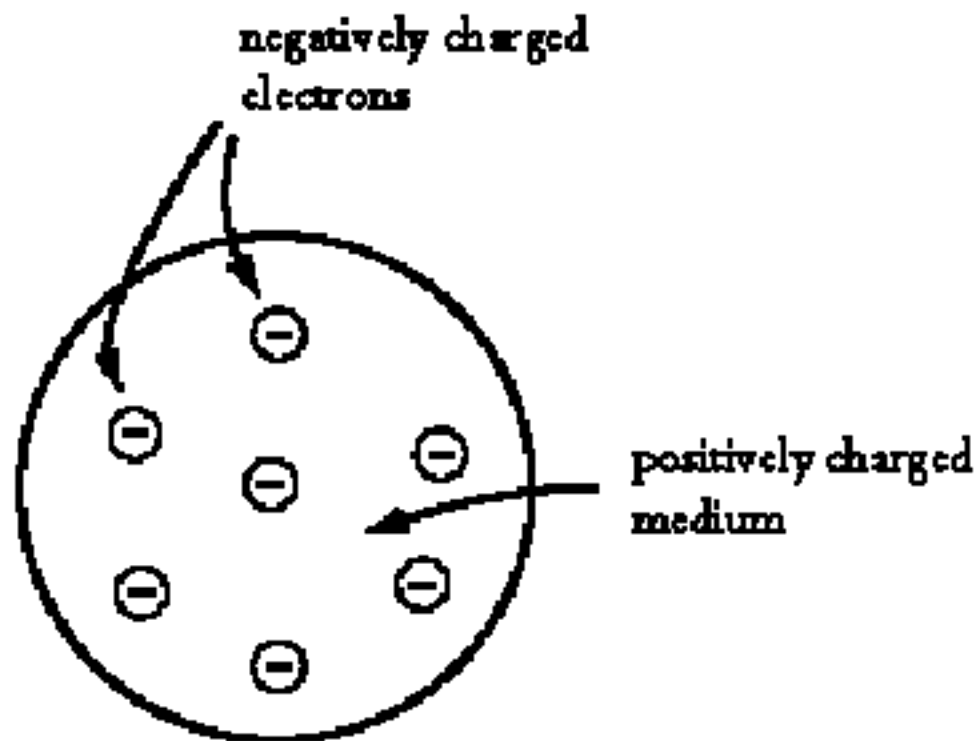
- early 1800's, John Dalton
 - that all matter was composed of smaller particles called atoms.
 - that atoms were tiny particles that could not be further divided into smaller particles.
 - Consequently, his model explained that atoms were smaller spheres.
 - Atoms go together in small whole number ratios to form compounds



Thomson's Atomic Model

- showed how he thought these electrons were arranged.
- showed that the negatively- charged electrons were embedded in a ball of positively charged material.
- model of the atom looks like plum pudding
 - referred to as "Thomson's Plum Pudding Model of the Atom."

Thomson's Atomic Model

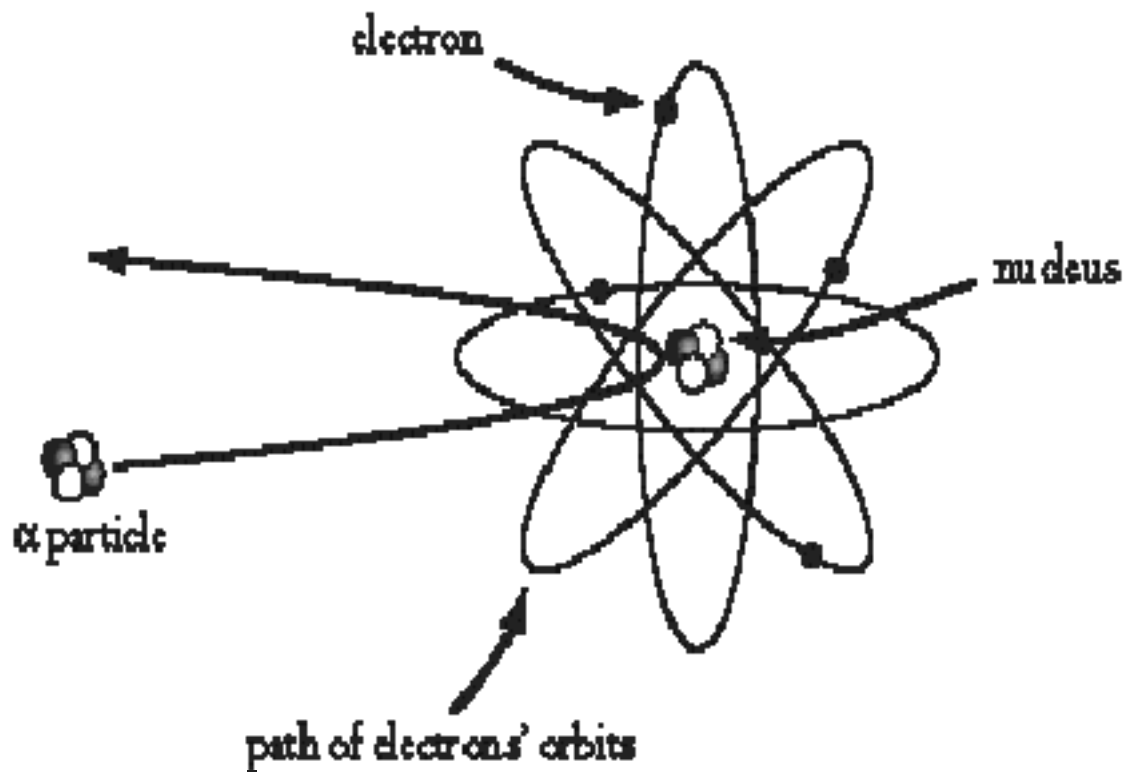




Rutherford's Atomic Model

- This model suggested that most of the mass of the atom was contained in the small nucleus
 - Called a nuclear atom
- that the rest of the atom was mostly empty space
- describes an atom as having a central positive nucleus surrounded by negative orbiting electrons.

Rutherford's Atomic Model



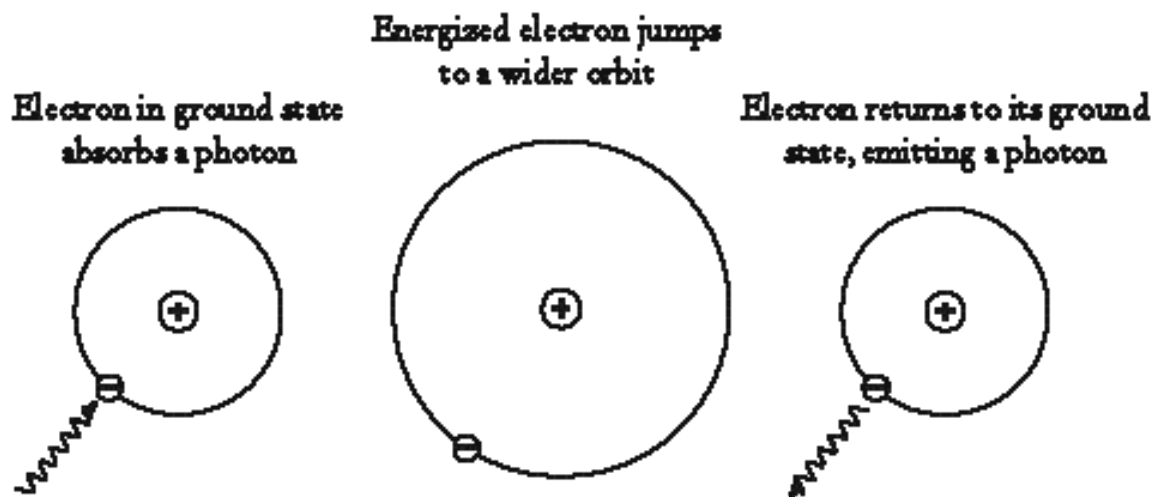


Bohr's Atomic Model

- explained that an atom has a central nucleus surrounded by distinct energy levels where the electrons may be found.
- This model suggested that the electrons circle the positively charged nucleus in definite spherical orbits.
- Looked like a “solar system”



Bohr's Atomic Model





Quantum Mechanical Model of the Atom

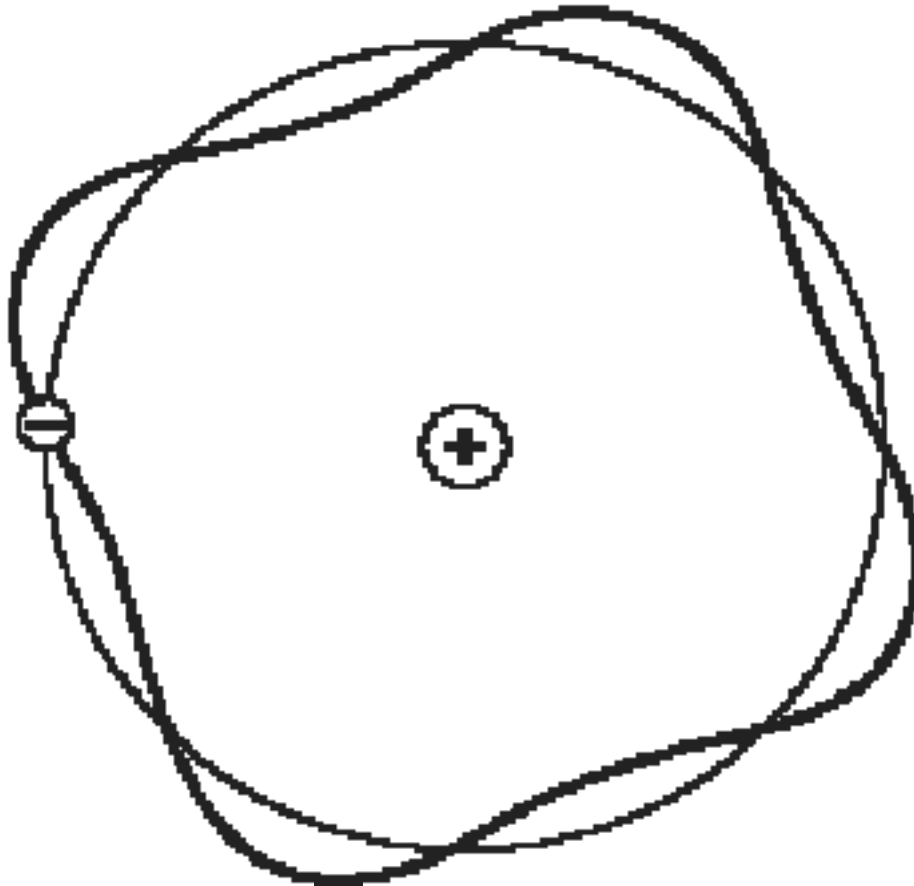
- fundamental ideas of the Bohr atomic model
- electrons do not actually orbit the nucleus in distinct paths
- the exact location of an electron in an atom cannot be determined; only the *probable* location of an electron can be determined



Quantum Mechanical Model of the Atom

- present day model describes an atom as having a nucleus surrounded by electrons found in regions of high probability, called electron orbitals.
- electron orbitals represent the spaces where the electrons are most likely to be found at any given time

Quantum Mechanical Model of the Atom



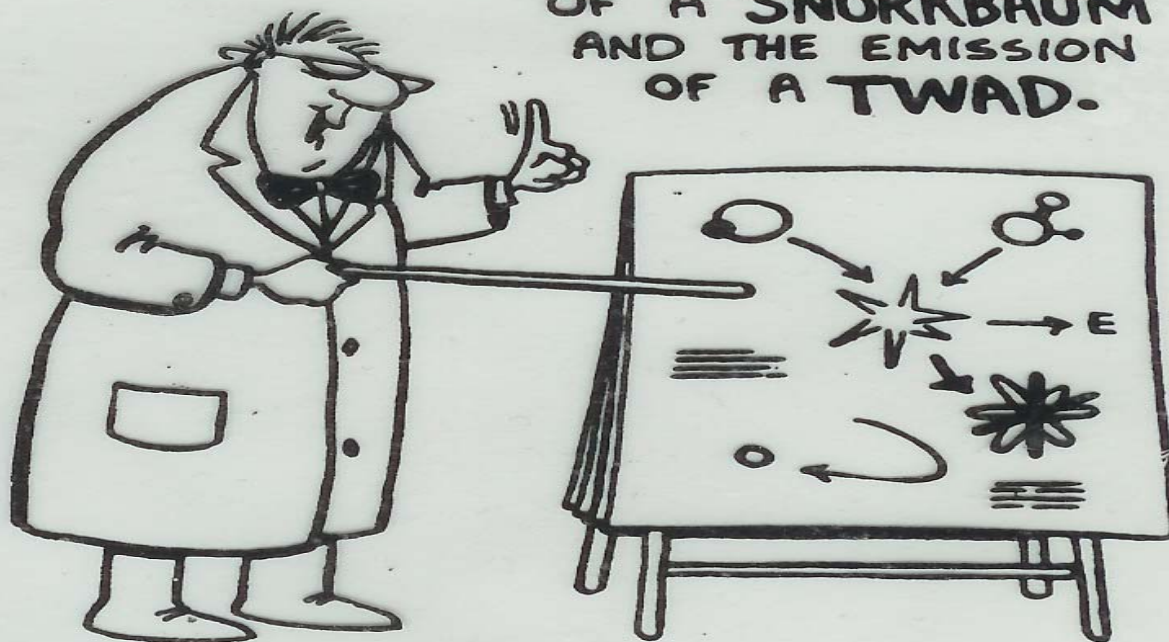


Quantum Mechanical Model of the Atom

- location of an electron depends on how much energy the electron has.
- Electrons are arranged in energy levels within a given electron cloud such that
 - the electrons with the lowest energy are in energy levels closest to the nucleus,
 - and the electron with the highest energy are in energy levels farthest from the nucleus.

The New Breed

SO, WHEN THIS DWEEBHONKER
COMBINES WITH THIS DINGLE,
WE GET THE FORMATION
OF A SNORKBAUM
AND THE EMISSION
OF A TWAD.



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What happens when particles are discovered by scientists with dopey last names.